

DEVELOPING A RESEARCH PROCESS PROCEDURE FOR ACADEMIC AND PRACTICAL MANAGEMENT

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Purpose: Developing a procedure for the course of the research process for management science and practice. An original procedure for the course of the research process in management and quality sciences was presented.

Design/methodology/approach: Based on the analysis of domestic and foreign literature, as well as the model of the research process, five stages have been defined, which should be included in the procedure of the research process. They included: selection of the research subject, determination of the nature of the research, determination of the transparency of the research purpose, selection of the method of conducting the research, determination of the size of the studied sample.

Findings: Taking into account the model of the research process, a procedure for conducting research was developed.

Research limitations/implications: The developed procedure is a premise for conducting further research in the direction of assigning research methods and techniques to individual elements of the research process stages in management and quality sciences. Selection of appropriate methods and research techniques will translate into the verification of research hypotheses, such as and answers to research questions.

Practical implications: First of all, it is important to develop a procedure for the course of the research process for management science and practice, and then, for individual stages of this process, assign appropriate research methods and techniques.

Social implications: The author's procedure for the course of the research process presented in this article is a response to how to operationalize phenomena in the sciences on management and quality and thus translate into research related to Industry 4.0.

Originality/value: The developed procedure for the course of the research process allows for detailed familiarization and carrying out of scientific research, and in particular for a precise presentation of the characteristics of the tested entity, dispelling doubts regarding the transparency of the conducted research, appropriate description of the method of conducting the research, and determining the size of the research sample.

Keywords: research procedure, research methods, research design.

Introduction

The analysis of domestic and foreign literature on both methodology and course of research processes has resulted in reflections on transformations that have been taking place over the years in management methods and that have provided an opportunity to explore the stance of any organisation (Dźwigoł, 2018; Dźwigoł, and Dźwigoł-Barosz, 2018).

In order to draw the attention of the world of science to increasingly complex problems of managing modern organisations, it is necessary to adapt the processes of mental cognition and research methodology to the requirements of descriptive and interpretative nature of these issues. This is also related to the specific character of management and quality sciences, which is characterised by a relatively low level of universalism and sustainability of scientific laws, with the need to take into account non-measurable factors and the prevalence of the projective function, as well as ensuring practical utility (Dul, and Hook, 2016; Patil, 2018; Tandukar, 2018).

The influence of the practical approach on the quality of the research process clearly indicates that already at the stage of defining a research problem it is difficult to choose one method that will allow for a complete and thorough diagnosis of the problem. It is thus necessary to have recourse to various research methods that would bring about a detailed answer to a question being posed (Dul, and Hak, 2016; Patil, 2018; Tandukar, 2018).

In this context, it may be important to firstly elaborate a procedure on how to conduct the research process for the sake of academic and practical management, and secondly to assign particular research methods and techniques to various stages of the process. Taking this into account, the article presents the author's own procedure of the research process in management and quality sciences.

Literature review

Scientific research is an indispensable element, but also a part of every scientific discipline, including science on management and quality.

The theory is a standardised principle on the basis of which one can clarify the relationship between two or more concepts and variables (Rahi, 2017).

Conducting of scientific research is composed of numerous elements which were planned in detail on the basis of continuous choices made both for the sake of reliability and credibility of research results (Dźwigoł, 2015).

Researchers (e.g. Alvesson, and Sandberg, 2013; Alvesson, and Kärreman, 2007) pointed out that the lack of new ideas and the lack of strong impact of research results in management and quality sciences on practical aspects, including Industry 4.0, have been worrying these days.

According to Bourke (Bourke, 2014), 'research is a process, not just a product'. Thus the concept of the research process, which shapes the theoretical and conceptual perspectives (Ngulube, Mathipa, and Gumbo, 2015), is closely related to research.

Frankfort-Nachmias and Nachmias (Frankfort-Nachmias, and Nachmias, 2001) note that the research process is a holistic set of activities that scientists undertake in the pursuit of knowledge, it is a paradigm of scientific inquiry. In addition, it must be documented in publications within the field - this way the value of the research can be appreciated and stronger conclusions can be drawn from individual studies (Seuring, 2008).

On the other hand, Vincent et al. (Vincent et al., 2002) conclude that the process is the key to the substantive and methodological evaluation of scientific research.

According to Cooke (Cooke, 2003), the research process should attempt to comprehensively address the problem from the point of view of the scope of research analysis and the ability to support the implementation process, through the use of selected management methods, and develop the necessary objectives, theses, hypotheses and research questions.

Kothari (Kothari, 2004) argues that the research process consists of a series of closely related activities that are necessary for the successful completion of research and the desired sequencing of these activities (according to the researcher, the research process consists of 11 steps).

Many Polish researchers support their deliberations with the research papers by, inter alia, Babiński (Babiński, 1997), who proposed a structure of the research process consisting of 12 steps.

Taking into account the above considerations and analysing national papers (Apanowicz, 2005; Czakon, 2016) as well as foreign ones (Mun, 2004; Jonker, and Pennink, 2010; Gill, and Johnson, 1997; Stuart, and Mc Cutcheon, 2002; Bouma, and Carland, 2016), it can be concluded that researchers focus their attention primarily on a definition of the research process and its essence. Some researchers have attempted to define stages and elements of the research process, however, their works have been but of descriptive nature.

To sum up, there has been a lack of a general procedure, which prompted the author to develop his own procedure of the research process.

Methodology

Models in scientific research are a specific form of cognition which, on the one hand, performs theoretical functions by providing a specific picture of reality, and on the other hand, practical functions by playing role of tools in empirical research (Szarucki, 2001).

They are closely related to theory, complementing it, simplifying a theory that is too complicated or taking the form of a paradigm or preliminary theory (Gospodarek, 2009).

The development of the research process procedure required, on the one hand, to use methodological assumptions of the research process model (Fig. 1), which is based on the generally applied way of proceeding, and on the other hand, the use of methodological assumptions.

On the basis of the analysis of domestic and foreign literature, as well as the research process model, one identified five stages which should cover the procedure of the research process. The stages are as follows:

- to select a research subject,
- to determine the nature of the research being carried out,
- to determine the transparency of the research goal,
- to decide how to conduct the research,
- to determine the size of a test sample.

In order to confirm the validity of the division of the research process into individual stages, free interviews were conducted with experts. The experts were domestic and foreign academics from universities, who willingly shared their knowledge and experience in the field of research methodology.

It can be concluded, from the conducted interviews, that the proposed stages are correct and can be used to develop the procedure of the research process.

Results

The model of the research process, presented in Figure 1¹, was the basis for developing the research process procedure for management-related science and practice.

¹ The stages of the research process model were described in more detail in (Dźwigoł, 2008).

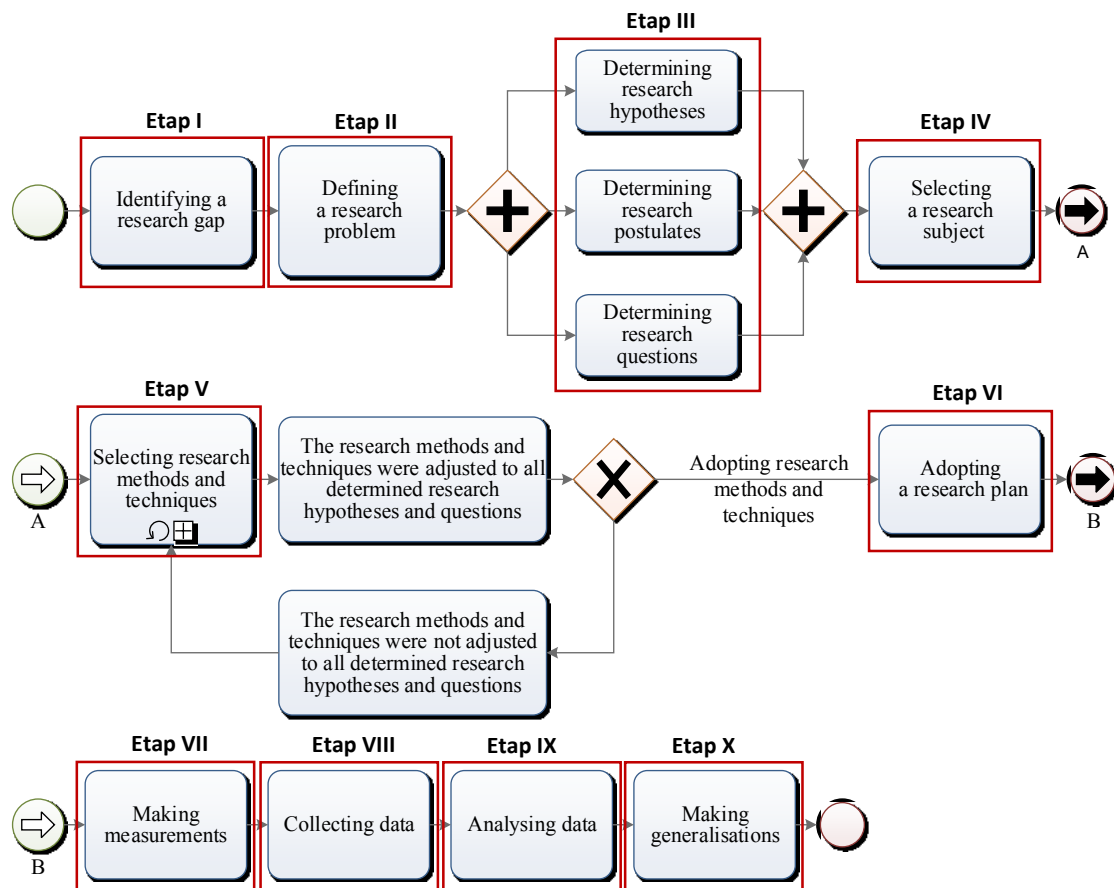


Figure 1. Model of the research process. Source: Author's own elaboration based on: (Dźwigoł, 2008).

Bearing in mind the model of the research process, the author has developed a procedure for conducting scientific research, which includes five stages (Dźwigoł, 2008) such as:

- selecting a research subject – defining what object lies in the interest of a given researcher,
- character of the carried-out research – the researcher should precisely define a type, character and kind of the carried-out research,
- research transparency – the researcher has stated what method he/she is going to use to present a predefined aim of the carried-out research,
- selecting a way in which the research study is carried out – conclusions reached on the basis of methods and techniques described in the source literature. What is more, it needs to be determined, in the first place, what rudimentary types of the researchers' involvement in the process of carrying out the research process are. Later on one needs to select methods and techniques that meet the conditions presented,
- determining the size of the sample being researched – it refers to the availability of the sample being assessed. Assigned methods and techniques of conducting research processes are often dependent on the sample size (some of them are destined to assess smaller populations, whereas others are to evaluate bigger ones).

Having analysed the above mentioned modules, as defined by the experts, the author presented how, in his opinion, the components should be divided (table 1).

Table 1.*Division of research process stages into particular components*

Research subject	Character of the research studies	Transparency of the research goal	Ways of conducting the research studies	Size of the research sample
<ul style="list-style-type: none"> – business entity, – personal aspect, – case (case study), – phenomenon, – environment, – process. 	<ul style="list-style-type: none"> – identifying/ explorative, – secondary, – experimental, – diagnostical, – model-related, – analytical. 	<ul style="list-style-type: none"> – non-disguised, – disguised. 	<ul style="list-style-type: none"> – indirectly, – directly, – participating, – non-participating. 	<ul style="list-style-type: none"> – below 20 observations, – from 20 to 50 observations, – from 50 to 100 observations, – from 100 to 250 observations, – above 250 observations.

Source: Author's own elaboration: (Dźwigoł, 2008).

The characteristics of various components of the suggested research procedure shall be as follows:

- in the stage related to the **research subject**, the following components were determined (Fig. 2):
 - business entities, all organisational units carrying out business activities for profit-making purposes (within the scope of organisational structure),
 - personal aspect, meaning staff (of various levels), patterns of behaviour and organisational culture in the company,
 - case study, meaning a detailed case – a real event is subject to analysis,
 - phenomenon, meaning any events related to the business activity, affecting the said entities,
 - environment, nearer and farther environment – broadly understood interested parties are taken into consideration,
 - process, each act/action undertaken to achieve a determined effect.

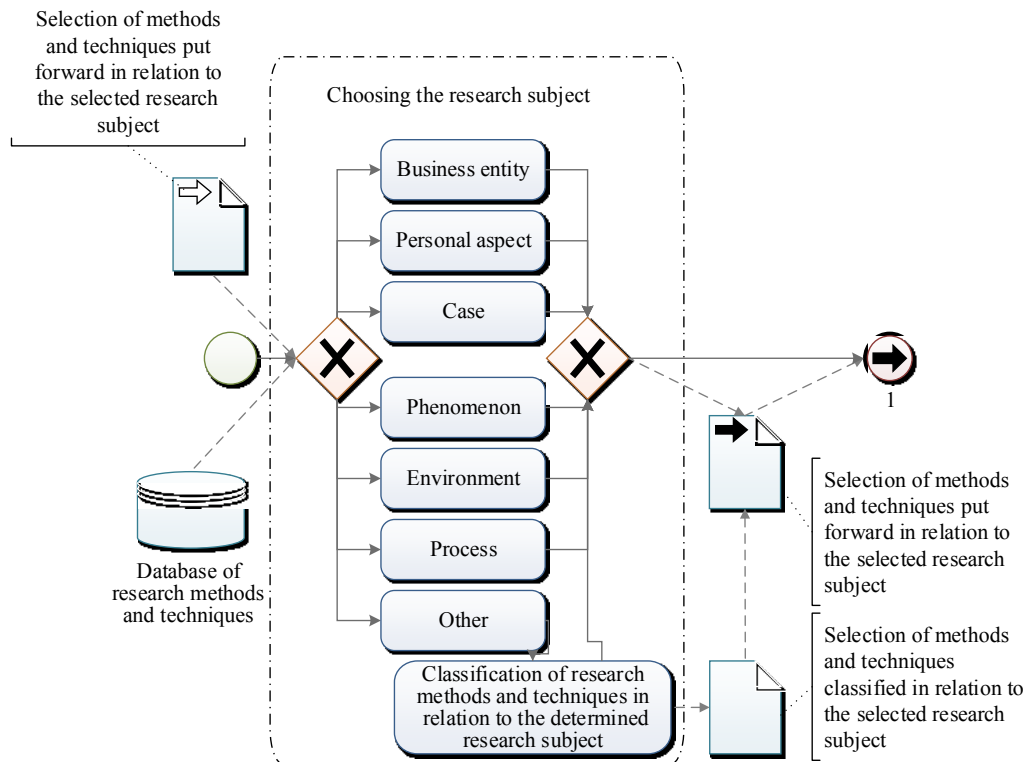


Figure 2. The first phase of the research process. Source: The author's own elaboration based on: (Dźwigoł, 2008).

- at the stage of the **research character** one distinguished the following components (Fig. 3):
 - identifying, meaning preliminary research studies – their aim is to identify a problem,
 - secondary, the research studies involve an analysis of existing and widely available data, gathered earlier,
 - experimental, it involves searching for and verifying relations between two variables, with frequent variable manipulation,
 - diagnostic, the research studies whose goal is to determine (diagnose) the condition of the given subject, its properties and operational principles,
 - model, the goal is to reflect, in the best possible way, the researched subject by means of a selected mode,
 - analytical, the goal is to detect operational structures and mechanisms of the researched subject.

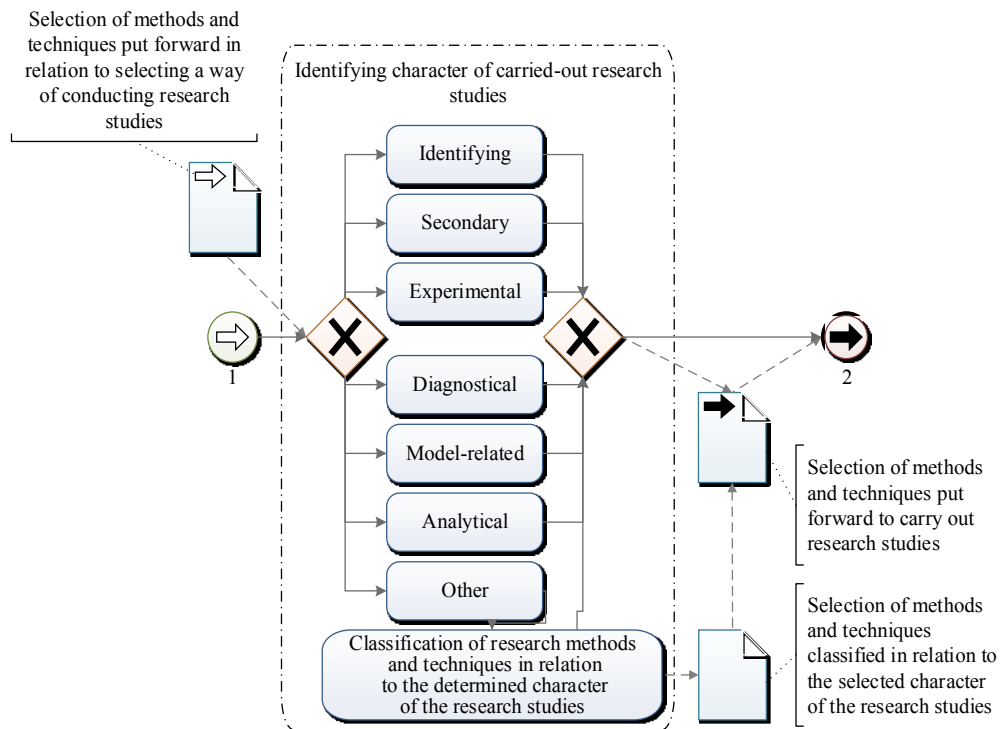


Figure 3. The second phase of the research process. Source: The author's own elaboration based on: (Dźwigoł, 2008).

- at the stage of the **goal transparency** one distinguished the following components (Fig. 4):
 - non-disguised, the research subjects are aware of the goal of the research process in which they take part,
 - disguised, the research goal is known but only to the researcher.

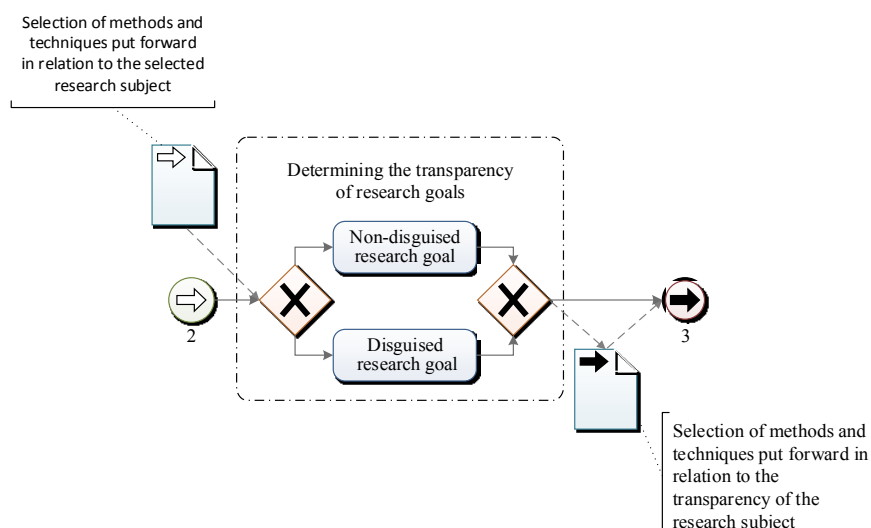


Figure 4. The third phase of the research process. Source: The author's own elaboration based on: (Dźwigoł, 2008).

- at the stage of the **ways in which the research study is conducted** one distinguished the following components (Fig. 5):
 - indirect studies, meaning that the studies are conducted remotely (the researcher is not participating personally in the study),
 - direct studies, meaning that the researcher is taking part in the study (being inside the research process),
 - participating, i.e. active participation in the conducted research (the researcher is ‘inside’ the examined subject),
 - non-participating, i.e. the researcher is ‘outside’ of the examined subject, does not interfere in the course of research.

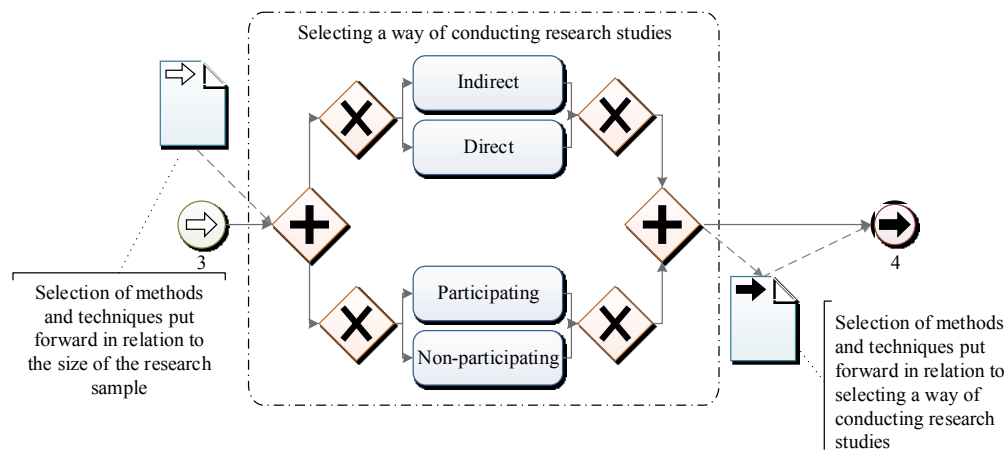


Figure 5. The fourth phase of the research process. Source: The author’s own elaboration based on: (Dźwigoł, 2008).

- at the stage of **sample size**, one distinguished the following components:
 - below 20,
 - from 20 to 50,
 - from 50 to 100,
 - from 100 to 250,
 - above 250.

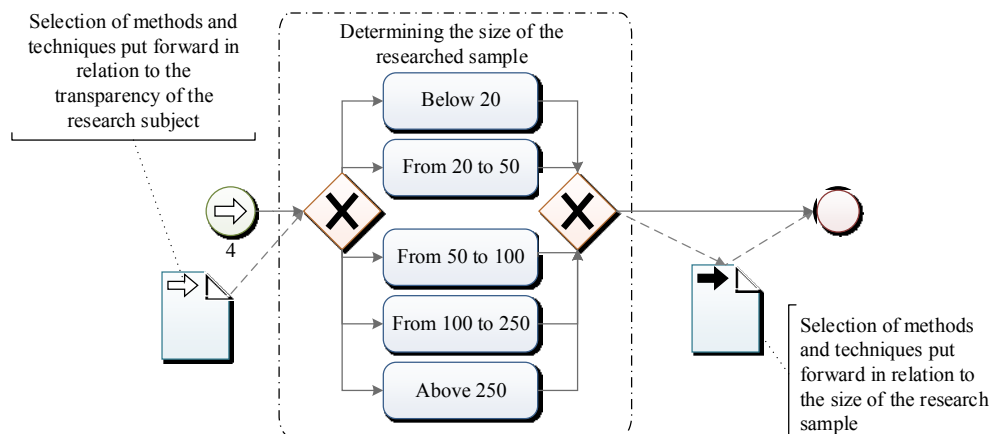


Figure 6. The fifth phase of the research process. Source: The author’s own elaboration based on: (Dźwigoł, 2008).

The division of research process stages into components was a premise for conducting subsequent studies in the form of diagnosed and classified methods and techniques as to these elements.

Discussion

In the management and quality sciences, one can observe a trend of rejecting traditional thinking in favour of combinative thinking, while methods and techniques are designed to discover rules and principles that govern organisations and change the latter for better. The essence of the research process is to formulate a research problem under which research goals are set, i.e. what is to be achieved during the research process. Defining of a research problem is the starting point for developing a research concept. In the research process, an attempt should be made to comprehensively cover the problem from the perspective of the scope of research analysis and in terms of the possibility of supporting the implementation process by using certain management methods (Dźwigoł, 2015).

The analysis of foreign literature (Pervez, 2020) shows that researchers focus on the essence of the research process as well as the classification of methods in organisational and business research, indicating their advantages and disadvantages. They provide evidence on the potential strengths and limitations of each approach. The greatest challenge for the researcher is not a choice related to the best available research method, but a decision which research method or technique is the most appropriate for the research goals.

The nature of the research affects the decision as to a precise design of the research, the creation of the research model and the choice of specific research methods. This was a premise for the development of the author's procedure for the research process.

Conclusion

The character of research determines the decision on developing the research in a precise way or on creating a research model.

It is worth emphasising that the original procedure of the research process presented in this article is a response on how to operationalise the phenomena in quality and management-related science and thus contribute to research related to the Industry 4.0, which is, nowadays, of great importance.

The developed procedure for the course of the research process allows for a thorough familiarisation and conducting of scientific research, in particular on a detailed presentation of the characteristics of the examined entity, dispelling of doubts concerning the nature of transparency of the research conducted, appropriate description of the method of conducting the research, as well as determination of the size of the research sample.

In addition, the developed procedure constituted a premise for further research aimed at assigning research methods and techniques to particular elements of the research process stages in management and quality sciences. The selection of appropriate research methods and techniques will translate into verification of the research hypotheses and answers to the posed research questions.

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